

**Table 2A**  
**Growth Rates for Intelsat Investment Amount, GDP and Population**  
 (Countries at or Near the Intelsat Minimum Share Throughout Their Membership)

| COUNTRY                          | Intelsat Investment<br>Amount Growth | GDP Growth | Population Growth |
|----------------------------------|--------------------------------------|------------|-------------------|
| AFGHAN                           | 4.50%                                | -7.11%     | 1.13%             |
| ARMENIA                          | -21.92%                              | -54.80%    | 1.47%             |
| AZERBAJ                          | -3.28%                               | -27.06%    | 1.40%             |
| BARBADOS                         | 3.74%                                | 3.20%      | 0.32%             |
| BENIN                            | 4.27%                                | -9.89%     | 2.96%             |
| BHUTAN                           | -2.14%                               | 2.04%      | -4.90%            |
| BOSNIA HERZ                      | -4.69%                               |            | 0.46%             |
| BOTSWANA                         | 0.52%                                | 9.35%      | 3.31%             |
| BULGARIA                         | 0.00%                                | -7.07%     | -0.16%            |
| BURKINA FA                       | 4.71%                                | 1.51%      | 2.60%             |
| CAPE VERDE                       | 0.53%                                | 6.92%      | 1.81%             |
| CENT AFR REP                     | 3.80%                                | 1.45%      | 2.39%             |
| CHAD                             | 3.74%                                | 0.07%      | 2.27%             |
| CONGO, REP                       | 3.74%                                | 1.41%      | 2.96%             |
| COSTA RICA                       | 3.74%                                | 2.16%      | 2.71%             |
| CROATIA                          | -2.14%                               |            | 0.65%             |
| CZECH REP                        | 12.04%                               | -0.85%     | 0.07%             |
| EL SALV                          | 4.71%                                | 3.06%      | 1.26%             |
| EQ GUINEA                        | 0.00%                                | -1.10%     | 3.78%             |
| FIJI                             | 3.50%                                | 0.45%      | 1.46%             |
| GABON                            | 4.73%                                | -0.13%     | 2.37%             |
| GUINEA                           | 2.99%                                | 3.86%      | 2.54%             |
| HONDURAS                         | 1.60%                                | -0.61%     | 3.10%             |
| KYRGHYZ REP                      | 0.52%                                | -14.31%    | 1.80%             |
| LIECHTEN                         | 3.74%                                | 0.00%      | 0.08%             |
| LUXEMBRG                         | 3.74%                                | 4.65%      | 0.62%             |
| MADAGA                           | 3.74%                                | -4.06%     | 2.77%             |
| MALI                             | 2.65%                                | 1.56%      | 2.58%             |
| MALTA                            | 25.59%                               | 5.08%      | 0.89%             |
| MAURITANIA                       | 3.81%                                | 0.44%      | 2.54%             |
| MICRONESIA                       | -0.87%                               | 6.32%      | 1.87%             |
| MONACO                           | 3.74%                                |            |                   |
| NAMIBIA                          | -0.87%                               | 1.28%      | 2.70%             |
| NEPAL                            | -0.22%                               | 2.50%      | 2.59%             |
| NICARAG                          | 4.17%                                | -4.54%     | 2.82%             |
| NIGER                            | 4.08%                                | -2.38%     | 3.24%             |
| P NEW GUINEA                     | 2.05%                                | 1.78%      | 2.23%             |
| PANAMA                           | 3.74%                                | 1.94%      | 2.08%             |
| POLAND                           | 26.51%                               | -0.06%     | 0.60%             |
| ROMANIA                          | 9.90%                                | -6.59%     | 0.24%             |
| RWANDA                           | -1.06%                               | 1.06%      | 2.95%             |
| SOMALIA                          | 1.60%                                | -5.85%     | 2.37%             |
| SWAZILAND                        | -1.07%                               | 2.75%      | 3.42%             |
| TAJIKISTAN                       | -4.69%                               | -42.06%    | 2.81%             |
| TANZANIA                         | 7.37%                                | -5.44%     | 3.15%             |
| TRINIDAD                         | 4.05%                                | -3.65%     | 1.28%             |
| TUNISIA                          | 3.67%                                | 2.28%      | 2.34%             |
| UGANDA                           | 1.57%                                | -9.01%     | 2.51%             |
| URUGUAY                          | 0.01%                                | 2.37%      | 0.59%             |
| UZBEKISTAN                       | 0.00%                                | -5.74%     | 2.44%             |
| VATICAN                          | 3.74%                                |            |                   |
| ZIMBABWE                         | -1.07%                               | -2.04%     | 3.09%             |
| Mean                             | 2.67%                                | -3.02%     | 1.85%             |
| Median                           | 3.59%                                | 0.25%      | 2.35%             |
| Standard Deviation               | 6.59%                                | 11.36%     | 1.42%             |
| Coefficient Variation            | 2.467                                | -3.764     | 0.769             |
| Total Intelsat Investment Growth |                                      | 3.74%      |                   |

**Table 2B**  
**Measures of Variability of Intelat Investment Shares for**  
**Countries With Shares Above Minimum for All or Most of 1978-1997**

| Ranked by Coefficient of Variation |            |                          |         |                    |
|------------------------------------|------------|--------------------------|---------|--------------------|
| Rank                               | Country    | Coefficient of Variation | Average | Standard Deviation |
| 1                                  | PHILIPPINE | 7.9                      | 0.667   | 0.053              |
| 2                                  | SOUTH AFR  | 8.1                      | 1.121   | 0.091              |
| 3                                  | BAHRAIN    | 8.4                      | 0.327   | 0.028              |
| 4                                  | JORDAN     | 8.7                      | 0.282   | 0.025              |
| 5                                  | GERMANY    | 9.8                      | 3.635   | 0.357              |
| 6                                  | KENYA      | 10.7                     | 0.357   | 0.038              |
| 7                                  | USA        | 10.8                     | 22.979  | 2.491              |
| 8                                  | AUSTRAL    | 11.8                     | 2.913   | 0.345              |
| 9                                  | YUGOSLV    | 12.2                     | 0.225   | 0.028              |
| 10                                 | UK         | 12.3                     | 12.209  | 1.496              |
| 11                                 | NETHER     | 12.9                     | 1.184   | 0.152              |
| 12                                 | PORTUGAL   | 13.5                     | 0.646   | 0.087              |
| 13                                 | ZAMBIA     | 13.7                     | 0.125   | 0.017              |
| 14                                 | SWITZ      | 14.4                     | 1.102   | 0.158              |
| 15                                 | CANADA     | 15.6                     | 2.412   | 0.376              |
| 16                                 | SWEDEN     | 16.8                     | 0.579   | 0.097              |
| 17                                 | JAPAN      | 17.8                     | 3.955   | 0.703              |
| 18                                 | SPAIN      | 18.6                     | 2.080   | 0.388              |
| 19                                 | IRELAND    | 19.2                     | 0.141   | 0.027              |
| 20                                 | COLOMBIA   | 20.1                     | 1.074   | 0.216              |
| 21                                 | SINGAP     | 20.8                     | 1.477   | 0.307              |
| 22                                 | BELGIUM    | 21.6                     | 0.668   | 0.145              |
| 23                                 | FRANCE     | 21.6                     | 4.822   | 1.042              |
| 24                                 | ECUADOR    | 22.3                     | 0.341   | 0.076              |
| 25                                 | QATAR      | 22.7                     | 0.282   | 0.064              |
| 26                                 | UAE        | 24.3                     | 1.387   | 0.338              |
| 27                                 | VENEZ      | 24.4                     | 1.172   | 0.286              |
| 28                                 | SYRIA      | 24.9                     | 0.125   | 0.031              |
| 29                                 | LIBYA      | 25.3                     | 0.136   | 0.034              |
| 30                                 | MAURITIUS  | 25.7                     | 0.142   | 0.036              |
| 31                                 | EGYPT      | 26.1                     | 0.561   | 0.146              |
| 32                                 | PERU       | 26.5                     | 0.721   | 0.191              |
| 33                                 | DENMARK    | 26.6                     | 0.457   | 0.121              |
| 34                                 | YEMEN      | 28                       | 0.165   | 0.046              |
| 35                                 | JAMAICA    | 28.6                     | 0.392   | 0.112              |
| 36                                 | MALAWI     | 29.1                     | 0.099   | 0.029              |
| 37                                 | NEW ZEAL   | 29.4                     | 0.524   | 0.154              |
| 38                                 | MALAYSIA   | 30.3                     | 0.638   | 0.193              |
| 39                                 | HAITI      | 30.6                     | 0.141   | 0.043              |
| 40                                 | KUWAIT     | 31.1                     | 0.941   | 0.293              |
| 41                                 | AUSTRIA    | 31.3                     | 0.341   | 0.107              |
| 42                                 | ANGOLA     | 32                       | 0.140   | 0.045              |
| 43                                 | ITALY      | 32.4                     | 2.815   | 0.912              |
| 44                                 | MOZAMBIQ   | 32.6                     | 0.095   | 0.031              |
| 45                                 | IRAQ       | 33.1                     | 0.338   | 0.112              |
| 46                                 | GREECE     | 33.4                     | 0.689   | 0.230              |
| 47                                 | IRAN       | 34                       | 1.008   | 0.343              |
| 48                                 | ICELAND    | 35.2                     | 0.142   | 0.050              |
| 49                                 | INDONESIA  | 35.6                     | 0.578   | 0.206              |
| 50                                 | GHANA      | 35.7                     | 0.065   | 0.023              |
| 51                                 | HUNGARY    | 36                       | 0.072   | 0.026              |
| 52                                 | CONGO, DR  | 36.4                     | 0.234   | 0.085              |
| 53                                 | SAUDI      | 36.9                     | 2.110   | 0.779              |
| 54                                 | INDIA      | 37                       | 1.476   | 0.546              |

| Ranked by Standard Deviation |             |                    |                          |         |
|------------------------------|-------------|--------------------|--------------------------|---------|
| Rank                         | Country     | Standard Deviation | Coefficient of Variation | Average |
| 1                            | ZAMBIA      | 0.017              | 13.7                     | 0.125   |
| 2                            | GHANA       | 0.023              | 35.7                     | 0.065   |
| 3                            | JORDAN      | 0.025              | 8.7                      | 0.282   |
| 4                            | HUNGARY     | 0.026              | 36                       | 0.072   |
| 5                            | IRELAND     | 0.027              | 19.2                     | 0.141   |
| 6                            | BAHRAIN     | 0.028              | 8.4                      | 0.327   |
| 7                            | YUGOSLV     | 0.028              | 12.2                     | 0.225   |
| 8                            | MALAWI      | 0.029              | 29.1                     | 0.099   |
| 9                            | MOZAMBIQ    | 0.031              | 32.6                     | 0.095   |
| 10                           | SYRIA       | 0.031              | 24.9                     | 0.125   |
| 11                           | LIBYA       | 0.034              | 25.3                     | 0.136   |
| 12                           | MAURITIUS   | 0.036              | 25.7                     | 0.142   |
| 13                           | KENYA       | 0.038              | 10.7                     | 0.357   |
| 14                           | RUSSIAN FED | 0.039              | 41.5                     | 0.094   |
| 15                           | SENEGAL     | 0.042              | 51                       | 0.082   |
| 16                           | TOGO        | 0.042              | 37.1                     | 0.114   |
| 17                           | ETHIOPIA    | 0.043              | 38.5                     | 0.112   |
| 18                           | HAITI       | 0.043              | 30.6                     | 0.141   |
| 19                           | ANGOLA      | 0.045              | 32                       | 0.140   |
| 20                           | YEMEN       | 0.046              | 28                       | 0.165   |
| 21                           | FINLAND     | 0.047              | 40.8                     | 0.115   |
| 22                           | PARAGUAY    | 0.050              | 37.6                     | 0.132   |
| 23                           | ICELAND     | 0.050              | 35.2                     | 0.142   |
| 24                           | PHILIPPINE  | 0.053              | 7.9                      | 0.667   |
| 25                           | CYPRUS      | 0.057              | 38.1                     | 0.150   |
| 26                           | BRUNEI DAR  | 0.061              | 46.8                     | 0.131   |
| 27                           | QATAR       | 0.064              | 22.7                     | 0.282   |
| 28                           | LEBANON     | 0.067              | 48.2                     | 0.139   |
| 29                           | MOROCCO     | 0.073              | 44                       | 0.167   |
| 30                           | ECUADOR     | 0.076              | 22.3                     | 0.341   |
| 31                           | BOLIVIA     | 0.078              | 56.2                     | 0.140   |
| 32                           | BANGLAD     | 0.082              | 50.2                     | 0.163   |
| 33                           | CONGO, DR   | 0.085              | 36.4                     | 0.234   |
| 34                           | SRI LANKA   | 0.087              | 94.7                     | 0.091   |
| 35                           | PORTUGAL    | 0.087              | 13.5                     | 0.646   |
| 36                           | SOUTH AFR   | 0.091              | 8.1                      | 1.121   |
| 37                           | SWEDEN      | 0.097              | 16.8                     | 0.579   |
| 38                           | CAMEROON    | 0.102              | 44.8                     | 0.228   |
| 39                           | AUSTRIA     | 0.107              | 31.3                     | 0.341   |
| 40                           | DOMINC REP  | 0.109              | 75.5                     | 0.144   |
| 41                           | IRAQ        | 0.112              | 33.1                     | 0.338   |
| 42                           | JAMAICA     | 0.112              | 28.6                     | 0.392   |
| 43                           | COTE IVORY  | 0.121              | 41.4                     | 0.292   |
| 44                           | DENMARK     | 0.121              | 26.6                     | 0.457   |
| 45                           | GUATEM      | 0.123              | 103.3                    | 0.119   |
| 46                           | BELGIUM     | 0.145              | 21.6                     | 0.668   |
| 47                           | EGYPT       | 0.146              | 26.1                     | 0.561   |
| 48                           | NETHER      | 0.152              | 12.9                     | 1.184   |
| 49                           | VIET NAM    | 0.152              | 122.8                    | 0.124   |
| 50                           | NEW ZEAL    | 0.154              | 29.4                     | 0.524   |
| 51                           | OMAN        | 0.155              | 44.9                     | 0.344   |
| 52                           | SWITZ       | 0.158              | 14.4                     | 1.102   |
| 53                           | ALGERIA     | 0.162              | 41.8                     | 0.388   |
| 54                           | PERU        | 0.191              | 26.5                     | 0.721   |

| Ranked by Coefficient of Variation |             |                          |         |                    |
|------------------------------------|-------------|--------------------------|---------|--------------------|
| Rank                               | Country     | Coefficient of Variation | Average | Standard Deviation |
| 55                                 | TOGO        | 37.1                     | 0.114   | 0.042              |
| 56                                 | PARAGUAY    | 37.6                     | 0.132   | 0.050              |
| 57                                 | CYPRUS      | 38.1                     | 0.150   | 0.057              |
| 58                                 | ETHIOPIA    | 38.5                     | 0.112   | 0.043              |
| 59                                 | THAILAND    | 38.5                     | 0.698   | 0.289              |
| 60                                 | FINLAND     | 40.8                     | 0.115   | 0.047              |
| 61                                 | ISRAEL      | 41.3                     | 0.758   | 0.313              |
| 62                                 | COTE IVORY  | 41.4                     | 0.292   | 0.121              |
| 63                                 | RUSSIAN FED | 41.5                     | 0.094   | 0.039              |
| 64                                 | ALGERIA     | 41.8                     | 0.388   | 0.162              |
| 65                                 | CHILE       | 41.8                     | 0.710   | 0.297              |
| 66                                 | MOROCCO     | 44                       | 0.167   | 0.073              |
| 67                                 | CAMEROON    | 44.8                     | 0.228   | 0.102              |
| 68                                 | OMAN        | 44.9                     | 0.344   | 0.155              |
| 69                                 | KOREA       | 45.3                     | 1.212   | 0.549              |
| 70                                 | ARGENTN     | 45.5                     | 1.449   | 0.659              |
| 71                                 | NIGERIA     | 46.3                     | 1.176   | 0.544              |
| 72                                 | BRAZIL      | 46.4                     | 2.156   | 1.000              |
| 73                                 | BRUNEI DAR  | 46.8                     | 0.131   | 0.061              |
| 74                                 | MEXICO      | 47                       | 0.774   | 0.364              |
| 75                                 | LEBANON     | 48.2                     | 0.139   | 0.067              |
| 76                                 | BANGLAD     | 50.2                     | 0.163   | 0.082              |
| 77                                 | SENEGAL     | 51                       | 0.082   | 0.042              |
| 78                                 | BOLIVIA     | 56.2                     | 0.140   | 0.078              |
| 79                                 | PAKISTAN    | 56.8                     | 0.590   | 0.335              |
| 80                                 | CHINA, PR   | 68.2                     | 1.142   | 0.779              |
| 81                                 | SUDAN       | 71.8                     | 0.270   | 0.194              |
| 82                                 | DOMINC REP  | 75.5                     | 0.144   | 0.109              |
| 83                                 | SRI LANKA   | 94.7                     | 0.091   | 0.087              |
| 84                                 | TURKEY      | 101.4                    | 0.346   | 0.350              |
| 85                                 | GUATEM      | 103.3                    | 0.119   | 0.123              |
| 86                                 | NORWAY      | 111.1                    | 0.919   | 1.021              |
| 87                                 | KAZKHSTAN   | 120.9                    | 0.165   | 0.200              |
| 88                                 | VIET NAM    | 122.8                    | 0.124   | 0.152              |

| Ranked by Standard Deviation |           |                    |                          |         |
|------------------------------|-----------|--------------------|--------------------------|---------|
| Rank                         | Country   | Standard Deviation | Coefficient of Variation | Average |
| 55                           | MALAYSIA  | 0.193              | 30.3                     | 0.638   |
| 56                           | SUDAN     | 0.194              | 71.8                     | 0.270   |
| 57                           | KAZKHSTAN | 0.200              | 120.9                    | 0.165   |
| 58                           | INDONESIA | 0.206              | 35.6                     | 0.578   |
| 59                           | COLOMBIA  | 0.218              | 20.1                     | 1.074   |
| 60                           | GREECE    | 0.230              | 33.4                     | 0.689   |
| 61                           | THAILAND  | 0.269              | 38.5                     | 0.698   |
| 62                           | VENEZ     | 0.286              | 24.4                     | 1.172   |
| 63                           | KUWAIT    | 0.293              | 31.1                     | 0.941   |
| 64                           | CHILE     | 0.297              | 41.8                     | 0.710   |
| 65                           | SINGAP    | 0.307              | 20.8                     | 1.477   |
| 66                           | ISRAEL    | 0.313              | 41.3                     | 0.758   |
| 67                           | PAKISTAN  | 0.335              | 56.8                     | 0.590   |
| 68                           | UAE       | 0.338              | 24.3                     | 1.387   |
| 69                           | IRAN      | 0.343              | 34                       | 1.008   |
| 70                           | AUSTRAL   | 0.345              | 11.8                     | 2.913   |
| 71                           | TURKEY    | 0.350              | 101.4                    | 0.346   |
| 72                           | GERMANY   | 0.357              | 9.8                      | 3.635   |
| 73                           | MEXICO    | 0.364              | 47                       | 0.774   |
| 74                           | CANADA    | 0.376              | 15.6                     | 2.412   |
| 75                           | SPAIN     | 0.388              | 18.6                     | 2.080   |
| 76                           | NIGERIA   | 0.544              | 46.3                     | 1.176   |
| 77                           | INDIA     | 0.548              | 37                       | 1.476   |
| 78                           | KOREA     | 0.549              | 45.3                     | 1.212   |
| 79                           | ARGENTN   | 0.659              | 45.5                     | 1.449   |
| 80                           | JAPAN     | 0.703              | 17.8                     | 3.955   |
| 81                           | CHINA, PR | 0.779              | 68.2                     | 1.142   |
| 82                           | SAUDI     | 0.779              | 36.9                     | 2.110   |
| 83                           | ITALY     | 0.912              | 32.4                     | 2.815   |
| 84                           | BRAZIL    | 1.000              | 46.4                     | 2.156   |
| 85                           | NORWAY    | 1.021              | 111.1                    | 0.919   |
| 86                           | FRANCE    | 1.042              | 21.6                     | 4.822   |
| 87                           | UK        | 1.496              | 12.3                     | 12.209  |
| 88                           | USA       | 2.491              | 10.8                     | 22.979  |

APPENDIX I

STATISTICAL ANALYSIS OF INVESTMENT IN INTELSAT, 1988-1996  
74 COUNTRIES WITH INVESTMENT SHARES GREATER THAN MINIMUM,  
NOT INCLUDING THE U.S.

## Regression Results:

## Parameter Estimates

| Variable  | DF | Parameter Estimate | Standard Error | T for H0:<br>Parameter=0 | Prob >  T |
|-----------|----|--------------------|----------------|--------------------------|-----------|
| INTERCEPT | 1  | -0.2551            | 0.1110         | -2.298                   | 0.0219    |
| LN_POPN   | 1  | 0.0531             | 0.0274         | 1.936                    | 0.0534    |
| LN_GDP    | 1  | 0.3380             | 0.0504         | 6.706                    | 0.0001    |
| LN_TELO   | 1  | 0.2567             | 0.0484         | 5.256                    | 0.0001    |
| ALLSAT    | 1  | -0.0088            | 0.0704         | -0.125                   | 0.9004    |
| FOC       | 1  | -0.2789            | 0.0713         | -3.908                   | 0.0001    |
| TREND     | 1  | -0.0014            | 0.0132         | -0.110                   | 0.9123    |

## WHERE :

POPN is a given country's annual population  
GDP is a given country's real GDP in constant 1996 US dollars  
TELO is the number of outgoing minutes of telephone calls  
ALLSAT is a dummy variable representing when a competitor's (non-Intelsat) satellite system has a footprint over the country  
FOC is a dummy variable for the presence of fiber-optic cable

## Regression Model Analysis:

## Analysis of Variance

| Source   | DF       | Sum of Squares | Mean Square | F Value | Prob>F |
|----------|----------|----------------|-------------|---------|--------|
| Model    | 6        | 524.025        | 87.337      | 235.723 | 0.0001 |
| Error    | 546      | 202.297        | 0.370       |         |        |
| C Total  | 552      | 726.323        |             |         |        |
| Root MSE | 0.60869  |                | R-square    | 0.7215  |        |
| Dep Mean | 2.30060  |                | Adj R-sq    | 0.7184  |        |
| C.V.     | 26.45809 |                |             |         |        |

## **Regression Model Discussion**

The regression model is based upon INTELSAT investment share data obtained from INTELSAT's annual reports, demographic data from the International Telecommunication Union's (ITU) World Telecommunication Indicators Database (WTI% A.DTA), and data collected from other sources. This note describes the variables used in the regression model as well as the structure and assumptions of the regression model.

### **1. Variable Definitions and Data Sources**

The variables used in the regression analysis are presented here by category. The variables are computed on an annual basis unless otherwise noted. The data set is a panel, containing annual longitudinal data from 1988 through 1996 for each of the countries used in the analysis.

#### **Country Variable**

**COUNTRY** The name of the countries included in the study. Includes all countries a member of INTELSAT as of May 1997, excluding those countries' observations for which there are significant numbers of missing data, and those which remain at or near the minimum investment share level for the entirety of their membership. All of the subsequent variables have values for each country for each year, unless otherwise noted.

**Investment Share Variables**

INVSHR      Each member country's particular percentage of the total country investment in INTELSAT.

**Investment Amount Variables**

INVAMT      A country's actual investment amount represented by the corresponding investment share percentage, measured in millions of current U.S. dollars. This is calculated by multiplying a given country's investment share by the total yearly investment amount in INTELSAT to obtain an investment share figure in current U.S. dollars. For 1988, "Total Investment in INTELSAT Space Segment" was used to obtain the total investment in INTELSAT ; for the period 1990—1996, owner's equity was used. These data were taken from various issues of INTELSAT Annual Reports. Data for 1989, which were unobtainable, were estimated by taking a linear average between the 1988 and 1990 data.

INVAMTPP    The INVAMT variable inflated to constant 1996 dollars by the "Industrial Commodities Less Fuels" Producer Price Index as published by the US Bureau of Labor Statistics (series WPU03T15M05).

**Demand-Side Variables**

POPEN      The annual population level, as measured in millions of people. These data come from the ITU database.

GDP\_PPI      The annual Gross Domestic Product for each country, measured in billions of current US dollars. For 1977-1995, these data come from the ITU database; 1996 data are from the 1997 *International Financial Statistics Yearbook* published by the IMF. These data were then inflated to constant 1996 dollars by the "Industrial Commodities Less Fuels" Producer Price Index as published by the US Bureau of Labor Statistics (series WPU03T15M05).

TEL\_OUT      The annual volume in minutes of outgoing international telephone traffic (effective (completed) traffic originating in a given country to destinations outside that country). These data come from the ITU database.

### **Demand-Substitute Variables**

- A. FOC      A dummy variable equaling one in the first and each subsequent year after a country first became connected to a fiber optics cable system. The data used to construct this variable came from *The Brattle Group Report*, Exhibit HSH-2.1.

### **B. Satellite Variables**

The data used to construct the satellite dummy variables came from satellite launch and coverage data available in the 1997 Phillips *World Satellite Almanac*.

- COL      A dummy variable that equals 1 in the first and each subsequent year after a country first gained access to a Columbia-operated satellite, and 0 otherwise.
- ISP      A dummy variable that equals 1 in the first and each subsequent year after a country first gained access to a Intersputnik-owned (Express- or Rimshot - operated) satellite, and 0 otherwise.
- ORION      A dummy variable that equals 1 in the first and each subsequent year after a country first gained access to a Columbia-operated satellite, and 0 otherwise.
- PAN      A dummy variable that equals 1 in the first and each subsequent year after a country first gained access to a PanAmSat-operated satellite, and 0 otherwise.
- ALLSAT      A dummy variable constructed from the COL, ISP, ORION, and PAN variables that equals 1 in the first and each subsequent year after a country first gained access to any of the four aforementioned competitor's satellite systems, and 0 otherwise.

### **Investment Class-Specific Variables**

- MIN      A dummy variable that equals 1 if a country's investment share level remains at or near the minimum INTELSAT investment level of 0.00500 % for the entire period of its membership. This variable remains constant throughout the time period considered.

**Time Trend Variable**

**TREND** This variable simply takes on a constant-level increasing integer value (1,2,3, etc) for each year. Given that the data are longitudinal, the time trend variable purports to capture any extraneous, non-specified effects that would impact on the dependent variable over time (e.g., technological changes).

**Logged Variables**

**LN\_INV** The natural log of the variable INVAMTPP.  
**LN\_POPN** The natural log of the variable POPN.  
**LN\_GDP** The natural log of the variable GDP\_PPI.  
**LN\_TELO** The natural log of the variable TEL\_OUT.

**2. Model Specification**

The regression presented here is a model of the investment shares as expressed in actual, inflation-adjusted constant US dollars of the member countries of INTELSTAT. Due to the fact that there is a wide variation in different country's values of the demographic and INTELSTAT investment share variables, investment share amounts are modeled as a doubled-logged function of several of the variables described above. The function can be specified as follows:

$$\text{INVAMTPP} = \text{POPN}^{\beta_1} \times \text{GDP\_PPI}^{\beta_2} \times \text{TEL\_OUT}^{\beta_3} \times e^{\beta_4 \times \text{FOC} + \beta_5 \times \text{ALLSAT} + \beta_6 \times \text{TREND}}$$

The specific regression equation that results from this model is, therefore:

$$\text{LN\_INV} = \beta_0 + \beta_1 \text{LN\_POPN} + \beta_2 \text{LN\_GDP\_PPI} + \beta_3 \text{LN\_TELO} + \beta_4 \text{FOC} + \beta_5 \text{ALLSAT} + \beta_6 \text{TREND}.$$



## Non-Minimum Investment Share Countries Used in the Regression Model

| OBS | COUNTRY    |    |            |
|-----|------------|----|------------|
|     |            | 44 | MOROCCO    |
| 1   | ALGERIA    |    |            |
| 2   | ARGENTN    | 45 | MOZAMBIQ   |
| 3   | AUSTRAL    | 46 | NETHER     |
| 4   | AUSTRIA    | 47 | NEW ZEAL   |
| 5   | BANGLAD    | 48 | NIGERIA    |
| 6   | BELGIUM    | 49 | NORWAY     |
| 7   | BOLIVIA    | 50 | OMAN       |
| 8   | BRAZIL     | 51 | PAKISTAN   |
| 9   | CANADA     | 52 | PARAGUAY   |
| 10  | CHILE      | 53 | PERU       |
| 11  | CHINA, PR  | 54 | PHILIPPINE |
| 12  | COLOMBIA   | 55 | PORTUGAL   |
| 13  | COTE IVORY | 56 | QATAR      |
| 14  | CYPRUS     | 57 | SAUDI      |
| 15  | DENMARK    | 58 | SENEGAL    |
| 16  | DOMINC REP | 59 | SINGAP     |
| 17  | ECUADOR    | 60 | SOUTH AFR  |
| 18  | EGYPT      | 61 | SPAIN      |
| 19  | ETHIOPIA   | 62 | SRI LANKA  |
| 20  | FINLAND    | 63 | SWEDEN     |
| 21  | FRANCE     | 64 | SWITZ      |
| 22  | GERMANY    | 65 | SYRIA      |
| 23  | GHANA      | 66 | THAILAND   |
| 24  | GREECE     | 67 | TOGO       |
| 25  | GUATEM     | 68 | TURKEY     |
| 26  | HAITI      | 69 | UAE        |
| 27  | ICELAND    | 70 | UK         |
| 28  | INDIA      | 71 | VENEZ      |
| 29  | INDONESIA  | 72 | VIET NAM   |
| 30  | IRAN       | 73 | YEMEN      |
| 31  | IRELAND    | 74 | ZAMBIA     |
| 32  | ISRAEL     |    |            |
| 33  | ITALY      |    |            |
| 34  | JAMAICA    |    |            |
| 35  | JAPAN      |    |            |
| 36  | JORDAN     |    |            |
| 37  | KENYA      |    |            |
| 38  | KOREA      |    |            |
| 39  | KUWAIT     |    |            |
| 40  | MALAWI     |    |            |
| 41  | MALAYSIA   |    |            |
| 42  | MAURITIUS  |    |            |
| 43  | MEXICO     |    |            |

APPENDIX II**"Event Study" Analysis of Comsat's Common Stock Price**

As part of the analysis described in this report, several critical identifiable events were studied to see if they had a significant impact on Comsat's stock prices. The list of events can be found in Table A2-1, and include events related to PanAmSat's satellite launches, the Hughes-PanAmSat merger, and the WTO/GATS communications satellite deal.

We considered the movement of Comsat's common share price relative to that of the Standard & Poor's 500 market index over the time period 1988 to 1997. [Both the share price and market index data were taken from CompuServe's historical stock price database, and were adjusted for dividends and splits as of 13 February 1998.] The daily returns of the S&P 500 were regressed on Comsat's daily returns. The resulting residuals were analyzed to identify those dates on which the stock price moved significantly, using a 95% confidence interval. Those dates for which the residual fell outside the confidence interval are denoted by an asterick in the column labeled "5% significant". The dates on which critical events occurred were then studied to see if there were excess returns to the Comsat stock price on or near those dates.

To enable for clearer analysis of the results, four separate tables, each reflecting one of the four categories of events studied, were created focussing solely on the dates on which the events occurred. These tables are labeled Table A2-2 through A2-5.

**Table A2-1: Important Events Relating to Comsat and PanAmSat**

| <b>PanAmSat and Hughes Merger</b> |   |
|-----------------------------------|---|
| 4/4/96                            | PanAmSat owners are exploring options, including a possible sale.   |
| 8/27/96                           | Sale of PanAmSat said to be imminent; Hughes tops list of suitors.  |
| 9/10/96                           | PanAmSat is said to be in talks to sell controlling stake to Hughes Electronics   |
| 9/20/96                           | Hughes Electronics Corp. and PanAmSat Corp. announce agreement to merge satellite businesses into new public company.   |
| 12/05/96                          | No Further Antitrust Approvals Necessary to Complete Merger, DOJ announces. The Antitrust Division of the U.S. Department of Justice permitted a key 30-day review period to pass without taking action to halt the merger or imposing an additional review period. |
| 4/04/97                           | FCC Approval Leaves Only SEC Clearance, Shareholder Vote For Merger Completion. FCC approves e transfer of orbital slot licenses from PanAmSat and Galaxy to the new, combined PanAmSat Corporation.  |
| 4/17/97                           | The SEC has declared the registration statement (of the Hughes-PanAmSat merger) effective. PanAmSat Corporation announced today that it will mail to proxy detailing the planned PanAmSat and Galaxy Satellite division of Hughes to its shareholders.              |
| 5/8/97                            | PanAmSat shareholders approve merger.   |
| 5/16/97                           | PanAmSat and the Galaxy satellite services business of Hughes Communications, Inc. officially merged.   |

| <b>WTO events, 96 and 2/97</b> |  |
|--------------------------------|--|
| 4/27/96                        | U.S. threatens to withdraw satellite services from its telecommunications liberalization offer, days before Tuesday's deadline of WTO talks.   |
| 4/29/96                        | EU leaders warned that the WTO telecoms talks could collapse due to the U.S. excluding satellite communication services from the deal. A senior EU negotiator noted that "it's a potential deal-breaker"; the EU delegation called the US proposal "completely unacceptable" |
| 4/30/96                        | US propose and win an extension in the talks   |
| 2/15/97                        | Negotiations on basic telecommunication services, held in the GATS framework under the auspices of the WTO, concluded successfully.  |

| <b>PanAmSat Satellite Launches</b> |  |
|------------------------------------|--|
| 6/15/88                            | PAS 1 satellite is successfully launched. Services Atlantic region (North and South America and Europe).   |
| 8/10/90                            | PanAmSat plans to launch third satellite to cover Asia and Pacific Rim.  |
| 9/3/93                             | PanAmSat announced today it is ordering a fourth satellite, from Hughes.   |
| 12/3/93                            | PanAmSat set to launch global system with close to \$1 billion in pre-launch agreements.   |
| 7/8/94                             | PAS-2 satellite successfully launched. Services Asia-Pacific region.   |
| 12/1/94                            | Panamasat K2 (PAS-3) satellite launch failure. <i>Satellite destroyed on launch.</i>   |
| 12/2/94                            | PAS-3 to be relaunched in a year, PanAmSat announces.  |
| 3/10/95                            | PanAmSat to be first to launch Hughes' new HS 601HP model.   |
| 6/29/95                            | PAS-4 satellite to be launched August 1.   |
| 8/3/95                             | PAS-4 satellite successfully launched. Services Indian Ocean region (South, SouthEast and NorthEast Asia, Africa, and Europe and Russia). Creates the world's first global private satellite system. |
| 1/5/96                             | PAS-7 launch is scheduled for late 1997 by Arianespace.  |
| 1/12/96                            | PAS-3 satellite successfully launched. Services Atlantic region (North and South America, Europe and Africa).  |
| 6/11/96                            | PanAmSat's PAS-6 begins major performance tests in preparation for December 1996 liftoff.  |
| 11/15/96                           | PanAmSat PAS-6 launch delayed; rescheduled for March/April 1997.   |
| 3/21/97                            | PanAmSat expects delay in completion of PAS-7.   |
| 4/29/97                            | FCC granted PanAmSat permission to construct, launch, and operate PAS-8 satellite.   |
| 4/30/97                            | PanAmSat reschedules PAS-6 satellite launch for late summer 1997.  |
| 5/1/97                             | PanAmSat delays launch of PAS-7.   |
| 5/22/97                            | PAS-6 launch delayed.  |
| 6/20/97                            | PanAmSat schedules to launch new satellite in 1999 with Arianespace.   |
| 8/28/97                            | Launch of PAS-5 satellite.   |
| 11/10/97                           | PAS-6 suffers in-orbit power problem.  |
| 12/9/97                            | PanAmSat launches Galaxy VIII-I satellite.   |

| <b>Comsat-specific events affecting its stock price</b> |   |
|---|---|
| 2/21/97   | Comsat reports 1996 earnings today. Revenues were \$1 billion, up 17.6% in 1995; net income was \$8.6 million, 18 cents per share, down from \$38 million, or 79 cents per share, in 1995.  |
| 3/25/97   | Comsat announces restructuring - plans to sell off non-core operations and cut back to its core business  |
| 4/10/97   | Comsat announces successful debt tender. The company's offer to repurchase its 8 1/8% debentures due April 1, 2004 was successfully concluded as of April 9, 1997. The company repurchased \$89.5 m of the \$160m in principal amount of the debentures outstanding.  |
| 4/21/97   | Comsat reported today a net loss of \$5.3m, or 11 cents per share, for 1Q97, versus net income of \$9.3m, or 19 cents per share, for same period last year. However, all of the losses came from Ascent Entertainment Group, which the company plans to divest in 1997. Excluding it, Comsat's 1Q income would have been \$6.8m, or 14 cents per share.<br>Comsat declares dividend of 5 cents per share. |
| 4/24/97   | Comsat Corp sues former CEO Bruce Crockett, Herbert Denton, Providence Capital and Wyser-Pratte, Inc  |
| 5/16/97   | Comsat board approves plan for a tax-free spin-off of Ascent Entertainment Group. Comsat has already received a favorable IRS ruling that the spin-off would not be taxable to the corporation or its shareholders.   |

| <b>PanAmSat-specific events</b> |  |
|---------------------------------|--|
| 6/30/97                         | PanAmSat agreed Monday to supply two satellites to MCI to build a nationwide satellite communications network for the Federal Aviation Administration. |
| 6/30/97                         | PanAmSat wins major contracts with Telstra, AAPT Sat-Tel for domestic satellite services in Australia.   |

**Table A2-2: PanAmSat Launches**

| Date     | Obs  | Predicted CQ_DR | Residuals | 5% significant | SP_DR  | CQ_DR  | PAS launches | Event  |
|----------|------|-----------------|-----------|----------------|--------|--------|--------------|--|
| 6/10/88  | 111  | 0.12%           | 0.76%     |                | 0.88%  | 0.17%  |              |  |
| 6/13/88  | 112  | -0.15%          | 0.37%     |                | 0.22%  | -0.17% |              |  |
| 6/14/88  | 113  | 0.73%           | 1.67%     |                | 2.40%  | 0.94%  |              |  |
| 6/15/88  | 114  | -0.07%          | 0.70%     |                | 0.64%  | -0.07% | 1            | PAS 1 satellite is successfully launched. Services Atlantic region (North and South America and Europe). |
| 6/16/88  | 115  | -0.59%          | -1.31%    |                | -1.91% | -0.73% |              |  |
| 6/17/88  | 116  | -0.65%          | 0.43%     |                | -0.22% | -0.80% |              |  |
| 6/20/88  | 117  | 0.05%           | -0.26%    |                | -0.21% | 0.08%  |              |  |
| 8/6/90   | 655  | -1.34%          | -2.27%    |                | -3.61% | -1.67% |              |  |
| 8/7/90   | 656  | -0.86%          | -1.22%    |                | -2.08% | -1.07% |              |  |
| 8/8/90   | 657  | 0.36%           | 2.61%     |                | 2.97%  | 0.48%  |              |  |
| 8/9/90   | 658  | 0.47%           | 0.98%     |                | 1.44%  | 0.61%  |              |  |
| 8/10/90  | 659  | -0.48%          | 0.07%     |                | -0.41% | -0.58% | 1            | PanAmSat plans to launch third satellite to cover Asia and Pacific Rim.                                  |
| 8/13/90  | 660  | -0.40%          | 0.80%     |                | 0.40%  | -0.48% |              |  |
| 8/14/90  | 661  | 0.84%           | 0.99%     |                | 1.83%  | 1.08%  |              |  |
| 8/15/90  | 662  | 0.36%           | 0.64%     |                | 1.00%  | 0.46%  |              |  |
| 8/16/90  | 663  | -1.04%          | 1.64%     |                | 0.59%  | -1.30% |              |  |
| 8/17/90  | 664  | -1.83%          | -0.13%    |                | -1.96% | -2.29% |              |  |
| 8/27/93  | 1430 | -0.14%          | -0.27%    |                | -0.41% | -0.16% |              |  |
| 11/29/93 | 1494 | -0.23%          | -0.24%    |                | -0.19% | 0.07%  |              |  |
| 11/30/93 | 1495 | 0.16%           | -1.32%    |                | -1.55% | -0.28% |              |  |
| 12/1/93  | 1496 | -0.11%          | -1.15%    |                | -0.98% | 0.22%  |              |  |
| 12/2/93  | 1497 | 0.21%           | -2.08%    |                | -2.19% | -0.12% |              |  |
| 12/3/93  | 1498 | 0.31%           | 0.60%     |                | 0.81%  | 0.28%  | 1            | PanAmSat set to launch global system with close to \$1 billion in pre-launch agreements                  |
| 12/6/93  | 1499 | 0.07%           | 1.31%     |                | 1.61%  | 0.40%  |              |  |
| 12/7/93  | 1500 | -0.01%          | -0.26%    |                | -0.20% | 0.10%  |              |  |
| 12/8/93  | 1501 | -0.16%          | -0.98%    |                | -0.99% | 0.00%  |              |  |
| 12/9/93  | 1502 | -0.26%          | 0.56%     |                | 0.40%  | -0.19% |              |  |
| 12/10/93 | 1503 | 0.06%           | 2.46%     |                | 2.20%  | -0.31% |              |  |

**Table A2-2: PanAmSat Launches**

| Date     | Obs  | Predicted CQ_DR | Residuals | 5% significant | SP_DR  | CQ_DR  | PAS launches | Event   |
|----------|------|-----------------|-----------|----------------|--------|--------|--------------|---|
| 7/5/94   | 1844 | -0.13%          | -0.77%    |                | -0.53% | 0.31%  |              |   |
| 7/6/94   | 1845 | 0.28%           | 2.28%     |                | 2.15%  | -0.15% |              |   |
| 7/7/94   | 1846 | 0.12%           | 1.30%     |                | 1.58%  | 0.37%  |              |   |
| 7/8/94   | 1847 | -0.08%          | -0.38%    |                | -0.26% | 0.17%  | 1            | PAS-2 satellite successfully launched Services Asia-Pacific region          |
| 7/11/94  | 1848 | -0.25%          | -0.70%    |                | -0.78% | -0.09% |              |   |
| 7/12/94  | 1849 | 0.45%           | 0.77%     |                | 0.52%  | -0.30% |              |   |
| 7/13/94  | 1850 | 0.43%           | 1.89%     |                | 2.34%  | 0.58%  |              |   |
| 7/14/94  | 1851 | 0.35%           | -0.69%    |                | -0.25% | 0.56%  |              |   |
| 7/15/94  | 1852 | 0.15%           | -1.37%    |                | -1.02% | 0.45%  |              |   |
| 11/25/94 | 1745 | 0.20%           | -1.02%    |                | -0.32% | 0.89%  |              |   |
| 11/28/94 | 1746 | 0.17%           | 0.12%     |                | 0.32%  | 0.27%  |              |   |
| 11/29/94 | 1747 | 0.26%           | -0.49%    |                | -0.32% | 0.23%  |              |   |
| 11/30/94 | 1748 | -0.75%          | 0.07%     |                | 0.32%  | 0.34%  |              |   |
| 12/1/94  | 1749 | -0.06%          | -0.22%    |                | -0.97% | -0.94% | 1            | Panamasat K2 (PAS-3) satellite launch failure Satellite destroyed on launch |
| 12/2/94  | 1750 | 0.50%           | -1.57%    |                | -1.63% | -0.06% | 1            | PAS-3 to be relaunched in a year, PanAmSat announces                        |
| 12/5/94  | 1751 | -0.26%          | -1.16%    |                | -0.66% | 0.64%  |              |   |
| 12/6/94  | 1752 | -0.11%          | -0.74%    |                | -1.00% | -0.31% |              |   |
| 12/7/94  | 1753 | -0.58%          | -1.58%    |                | -1.69% | -0.13% |              |   |
| 12/8/94  | 1754 | -0.61%          | -0.79%    |                | -1.37% | -0.72% |              |   |
| 12/9/94  | 1755 | 0.45%           | 0.96%     |                | 0.35%  | -0.76% |              |   |
| 3/6/95   | 1813 | -0.17%          | -0.23%    |                | -0.35% | -0.13% |              |   |
| 3/7/95   | 1814 | 0.01%           | 0.51%     |                | 0.35%  | -0.20% |              |   |
| 3/8/95   | 1815 | 0.00%           | -0.71%    |                | -0.69% | 0.03%  |              |   |
| 3/9/95   | 1816 | 0.62%           | 1.05%     |                | 1.05%  | 0.01%  |              |   |
| 3/10/95  | 1817 | 0.57%           | -0.97%    |                | -0.34% | 0.80%  | 1            | PanAmSat to be first launch Hughes' new HS 801HP model                      |
| 3/13/95  | 1818 | 0.24%           | -0.91%    |                | -0.35% | 0.73%  |              |   |
| 3/14/95  | 1819 | -0.01%          | -0.59%    |                | -0.35% | 0.32%  |              |   |
| 3/15/95  | 1820 | 0.29%           | -0.68%    |                | -0.70% | 0.00%  |              |   |
| 3/16/95  | 1821 | 0.32%           | -0.29%    |                | 0.00%  | 0.39%  |              |   |
| 3/17/95  | 1822 | 0.01%           | 0.03%     |                | 0.35%  | 0.42%  |              |   |

A2-6

**Table A2-2: PanAmSat Launches**

| Date    | Obs  | Predicted CQ_DR | Residuals | 5% significant | SP_DR  | CQ_DR  | PAS launches | Event  |
|---------|------|-----------------|-----------|----------------|--------|--------|--------------|--|
| 6/26/95 | 1891 | -0.34%          | 0.72%     |                | 0.31%  | -0.50% |              |  |
| 6/27/95 | 1892 | -0.17%          | -1.21%    |                | -1.55% | -0.42% |              |  |
| 6/28/95 | 1893 | -0.01%          | -0.14%    |                | -0.32% | -0.20% |              |  |
| 6/29/95 | 1894 | 0.23%           | -2.52%    |                | -2.53% | 0.00%  | 1            | PAS-4 satellite to be launched August 1  |
| 6/30/95 | 1895 | 0.08%           | 0.42%     |                | 0.65%  | 0.30%  |              |  |
| 7/3/95  | 1896 | 0.33%           | 1.54%     |                | 1.61%  | 0.11%  |              |  |
| 7/5/95  | 1897 | 0.30%           | -0.33%    |                | 0.00%  | 0.43%  |              |  |
| 7/6/95  | 1898 | 0.64%           | 0.02%     |                | 0.32%  | 0.39%  |              |  |
| 7/28/95 | 1914 | -0.17%          | 0.36%     |                | 0.27%  | -0.10% |              |  |
| 7/31/95 | 1915 | -0.35%          | -0.10%    |                | -0.27% | -0.21% |              |  |
| 8/1/95  | 1916 | 0.32%           | 0.62%     |                | 0.27%  | -0.42% |              |  |
| 8/2/95  | 1917 | -0.76%          | 0.77%     |                | 1.09%  | 0.42%  |              |  |
| 8/3/95  | 1918 | 0.31%           | -0.32%    |                | -1.08% | -0.94% | 1            | PAS-4 satellite successfully launched. Services Indian Ocean region (South, SouthEast and NorthEast Asia, Africa, and Europe and Russia). Creates the world's first global private satellite system. |
| 8/4/95  | 1919 | 0.18%           | 2.40%     |                | 2.72%  | 0.41%  |              |  |
| 8/7/95  | 1920 | -0.04%          | 1.41%     |                | 1.59%  | 0.24%  |              |  |
| 8/8/95  | 1921 | 0.06%           | -1.79%    |                | -1.82% | -0.03% |              |  |
| 1/2/96  | 2022 | 0.56%           | -1.01%    |                | -0.66% | 0.46%  |              |  |
| 1/3/96  | 2023 | -0.29%          | 0.43%     |                | 0.99%  | 0.72%  |              |  |
| 1/4/96  | 2024 | -0.57%          | -1.67%    |                | -1.96% | -0.35% |              |  |
| 1/5/96  | 2025 | 0.32%           | -1.09%    |                | -1.67% | -0.71% | 1            | PAS-7 launch is scheduled for late 1997 by Arianespace   |
| 1/8/96  | 2026 | -0.50%          | 1.71%     |                | 2.03%  | 0.43%  |              |  |
| 1/9/96  | 2027 | -1.34%          | -0.83%    |                | -1.33% | -0.61% |              |  |
| 1/10/96 | 2028 | -0.44%          | -0.68%    |                | -2.02% | -1.68% |              |  |
| 1/11/96 | 2029 | 0.12%           | 1.13%     |                | 0.69%  | -0.54% |              |  |
| 1/12/96 | 2030 | -0.04%          | -1.14%    |                | -1.02% | 0.17%  | 1            | PAS-3 satellite successfully launched. Services Atlantic region (North and South America, Europe and Africa).  |
| 1/15/96 | 2031 | 0.36%           | -1.00%    |                | -1.03% | -0.03% |              |  |
| 1/16/96 | 2032 | 0.46%           | -2.80%    | *              | -2.44% | 0.47%  |              |  |
| 1/17/96 | 2033 | -0.16%          | 0.61%     |                | 1.07%  | 0.59%  |              |  |

A2-7



**Table A2-2: PanAmSat Launches**

| Date     | Obs  | Predicted CQ_DR | Residuals | 5% significant | SP_DR  | CQ_DR  | PAS launches | Event  |
|----------|------|-----------------|-----------|----------------|--------|--------|--------------|--|
| 6/6/96   | 2131 | -1.04%          | -0.80%    |                | -0.65% | 0.21%  |              |  |
| 6/7/96   | 2132 | 0.46%           | -0.27%    |                | -1.31% | -1.30% |              |  |
| 6/10/96  | 2133 | 0.16%           | 0.86%     |                | 1.32%  | 0.60%  |              |  |
| 6/11/96  | 2134 | -0.26%          | 2.02%     |                | 2.18%  | 0.22%  | 1            | PanAmSat's PAS-6 begins major performance tests in preparation for December 1996 liftoff.                                  |
| 6/12/96  | 2135 | -0.39%          | 0.69%     |                | 0.43%  | -0.31% |              |  |
| 6/13/96  | 2136 | -0.21%          | 0.60%     |                | 0.21%  | -0.48% |              |  |
| 6/14/96  | 2137 | -0.04%          | -0.64%    |                | -0.85% | -0.25% |              |  |
| 11/12/96 | 2242 | -0.07%          | 0.60%     |                | 0.51%  | -0.09% |              |  |
| 11/13/96 | 2243 | 0.26%           | 0.33%     |                | 0.26%  | -0.08% |              |  |
| 11/14/96 | 2244 | 0.63%           | 1.01%     |                | 1.28%  | 0.35%  |              |  |
| 11/15/96 | 2245 | -0.20%          | 0.63%     |                | 1.26%  | 0.81%  | 1            | PanAmSat PAS-6 launch delayed; rescheduled for March/April 1997  |
| 11/18/96 | 2246 | 0.28%           | 0.45%     |                | 0.25%  | -0.23% |              |  |
| 11/19/96 | 2247 | 0.43%           | 1.21%     |                | 1.49%  | 0.37%  |              |  |
| 11/20/96 | 2248 | -0.07%          | 0.05%     |                | 0.49%  | 0.56%  |              |  |
| 3/18/97  | 2328 | -0.56%          | -1.09%    |                | -0.93% | 0.21%  |              |  |
| 3/19/97  | 2329 | -0.38%          | -1.31%    |                | -1.88% | -0.70% |              |  |
| 3/20/97  | 2330 | 0.23%           | -1.29%    |                | -1.67% | -0.46% |              |  |
| 3/21/97  | 2331 | 0.12%           | 1.23%     |                | 1.46%  | 0.30%  | 1            | PanAmSat expects delay in completion of PAS-7.   |
| 3/24/97  | 2332 | 0.73%           | 1.31%     |                | 1.44%  | 0.17%  |              |  |
| 3/25/97  | 2333 | -0.25%          | -1.20%    |                | -0.47% | 0.94%  |              | Comsat announces restructuring - plans to sell off non-core operations and cut back to its core business                   |
| 3/26/97  | 2334 | -1.10%          | -0.22%    |                | -0.48% | -0.31% |              |  |
| 4/24/97  | 2354 | -0.72%          | -5.58%    | *              | -5.62% | -0.03% |              | Comsat petitioned the FCC today to relieve it from its regulatory burden imposed by its "dominant carrier" classification. |
| 4/25/97  | 2355 | 0.06%           | -2.56%    |                | -3.27% | -0.89% |              |  |
| 4/28/97  | 2356 | 1.55%           | 0.56%     |                | 0.62%  | 0.09%  |              |  |
| 4/29/97  | 2357 | 1.40%           | -0.93%    |                | 0.61%  | 1.97%  | 1            | FCC granted PanAmSat permission to construct, launch, and operate PAS-8 satellite.   |
| 4/30/97  | 2358 | 0.03%           | -0.79%    |                | 0.61%  | 1.78%  | 1            | PanAmSat reschedules PAS-6 satellite launch for late summer 1997   |
| 5/1/97   | 2359 | 0.75%           | 1.48%     |                | 1.51%  | 0.05%  | 1            | PanAmSat delays launch of PAS-7.   |
| 5/2/97   | 2360 | 1.49%           | 0.74%     |                | 1.49%  | 0.96%  |              |  |
| 5/5/97   | 2361 | 0.71%           | 0.56%     |                | 2.05%  | 1.90%  |              |  |
| 5/6/97   | 2362 | -0.71%          | 1.30%     |                | 2.01%  | 0.91%  |              |  |

**Table A2-2: PanAmSat Launches**

| Date     | Obs  | Predicted CQ_DR | Residuals | 5% significant | SP_DR  | CQ_DR  | PAS launches | Event  |
|----------|------|-----------------|-----------|----------------|--------|--------|--------------|--|
| 5/19/97  | 2371 | 0.16%           | 0.60%     |                | 0.29%  | -0.37% |              |  |
| 5/20/97  | 2372 | 0.64%           | -0.74%    |                | -0.58% | 0.22%  |              |  |
| 5/21/97  | 2373 | -0.31%          | 0.24%     |                | 0.88%  | 0.82%  |              |  |
| 5/22/97  | 2374 | 0.38%           | 0.89%     |                | 0.58%  | -0.38% | 1            | PAS-6 launch delayed.  |
| 5/23/97  | 2375 | 0.38%           | 1.35%     |                | 1.73%  | 0.50%  |              |  |
| 5/27/97  | 2376 | 0.07%           | 1.32%     |                | 1.70%  | 0.50%  |              |  |
| 6/17/97  | 2391 | -0.12%          | -0.13%    |                | -0.26% | -0.14% |              |  |
| 6/18/97  | 2392 | 0.33%           | 1.40%     |                | 1.28%  | -0.13% |              |  |
| 6/19/97  | 2393 | 0.45%           | 0.69%     |                | 1.01%  | 0.43%  |              |  |
| 6/20/97  | 2394 | -1.00%          | -0.70%    |                | -0.25% | 0.58%  | 1            | PanAmSat schedules to launch new satellite in 1999 with Arianespace. |
| 6/23/97  | 2395 | -0.09%          | 1.00%     |                | 0.00%  | -1.25% |              |  |
| 6/24/97  | 2396 | 0.39%           | -0.41%    |                | -0.50% | -0.10% |              |  |
| 6/25/97  | 2397 | -0.54%          | -0.64%    |                | -0.25% | 0.50%  |              |  |
| 8/22/97  | 2438 | 0.76%           | -0.68%    |                | -1.99% | -1.63% |              |  |
| 8/25/97  | 2439 | -0.61%          | -0.61%    |                | 0.15%  | 0.97%  |              |  |
| 8/26/97  | 2440 | -0.62%          | 1.05%     |                | 0.43%  | -0.76% |              |  |
| 8/27/97  | 2441 | -0.25%          | 0.48%     |                | -0.14% | -0.77% |              |  |
| 8/28/97  | 2442 | -0.47%          | -0.61%    |                | -0.87% | -0.30% | 1            | Launch of PAS-5 satellite.   |
| 8/29/97  | 2443 | 1.00%           | 0.76%     |                | 0.29%  | -0.58% |              |  |
| 9/2/97   | 2444 | 1.54%           | -0.85%    |                | 0.14%  | 1.27%  |              |  |
| 9/3/97   | 2445 | -0.17%          | -1.25%    |                | 0.29%  | 1.96%  |              |  |
| 11/5/97  | 2490 | -0.46%          | 2.65%     |                | 3.22%  | 0.73%  |              |  |
| 11/6/97  | 2491 | -1.01%          | 1.50%     |                | 1.04%  | -0.57% |              |  |
| 11/7/97  | 2492 | 0.11%           | -0.79%    |                | -1.80% | -1.26% |              |  |
| 11/10/97 | 2493 | -0.36%          | -0.11%    |                | 0.00%  | 0.15%  | 1            | PAS-6 suffers in-orbit power problem.                                |
| 11/11/97 | 2494 | -0.81%          | -0.55%    |                | -0.92% | -0.44% |              |  |
| 11/12/97 | 2495 | -0.48%          | -1.17%    |                | -1.98% | -1.01% |              |  |

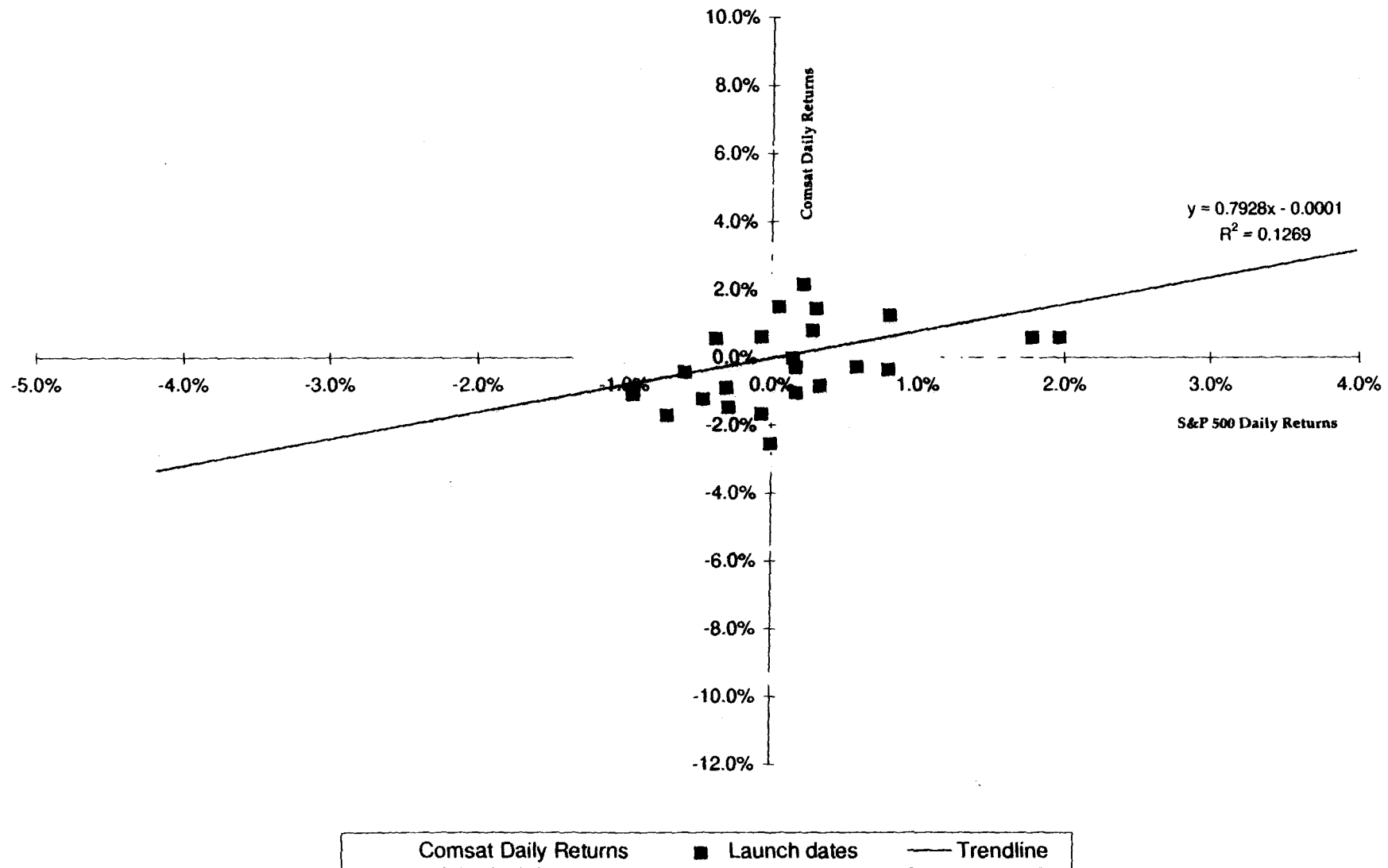
A2-9

**Table A2-2: PanAmSat Launches**

| Date     | Obs  | Predicted CQ_DR | Residuals | 5% significant | SP_DR  | CQ_DR  | PAS launches | Event                                     |
|----------|------|-----------------|-----------|----------------|--------|--------|--------------|---|
| 12/4/97  | 2510 | 0.01%           | 0.79%     |                | 1.09%  | 0.40%  |              |   |
| 12/5/97  | 2511 | 0.39%           | 0.53%     |                | 0.54%  | 0.03%  |              |   |
| 12/8/97  | 2512 | -0.38%          | 0.95%     |                | 1.34%  | 0.51%  |              |   |
| 12/9/97  | 2513 | -0.73%          | -0.81%    |                | -1.19% | -0.46% | 1            | PanAmSat launches Galaxy VIII-I satellite |
| 12/10/97 | 2514 | -0.70%          | -0.34%    |                | -1.07% | -0.91% |              |   |
| 12/11/97 | 2515 | -0.56%          | 0.16%     |                | -0.54% | -0.87% |              |   |
| 12/12/97 | 2516 | 0.45%           | 0.84%     |                | 0.27%  | -0.70% |              |   |

**Chart A2-2**

**Comsat vs S&P 500 Daily Returns;  
(PanAmSat launch dates highlighted)**

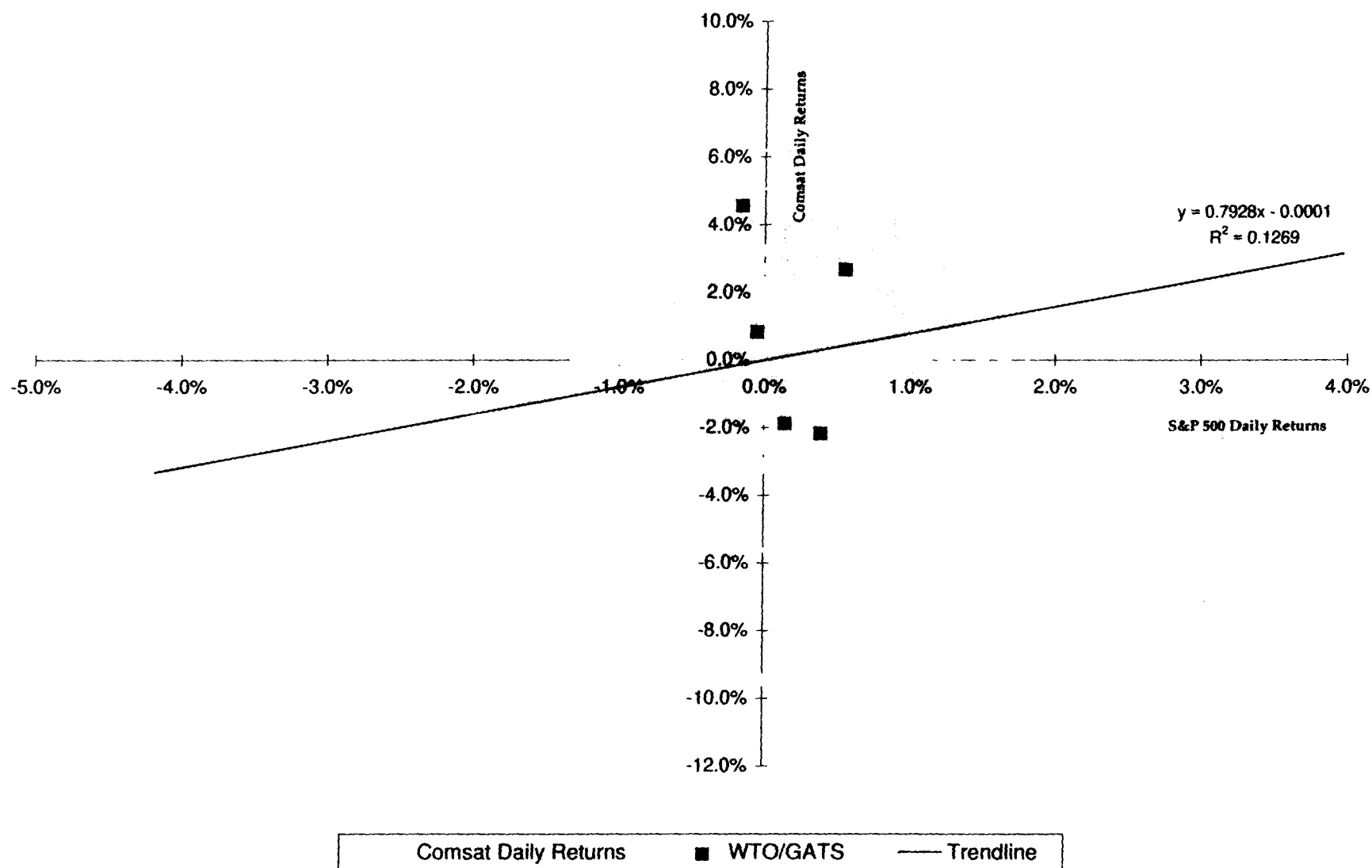


A2-11

**Table A2-3: WTO/GATS Events**

| Date    | Obs  | Predicted CQ_DR | Residuals | 5% significant | CQ_DR  | SP_DR  | WTO Events | Event  |
|---------|------|-----------------|-----------|----------------|--------|--------|------------|--|
| 1/5/88  | 1    | 2.22%           | -0.67%    |                | 1.55%  | 2.82%  |            |  |
| 1/6/88  | 2    | -0.13%          | 0.13%     |                | 0.00%  | -0.14% |            |  |
| 1/7/88  | 3    | 0.06%           | 0.15%     |                | 0.22%  | 0.10%  |            |  |
| 1/8/88  | 4    | -2.07%          | 2.29%     |                | 0.22%  | -2.60% |            |  |
| 4/19/96 | 2098 | 0.33%           | 0.11%     |                | 0.44%  | 0.43%  |            |  |
| 4/22/96 | 2099 | 0.30%           | -3.12%    | *              | -2.82% | 0.39%  |            |  |
| 4/23/96 | 2100 | 0.19%           | -2.20%    |                | -2.01% | 0.26%  |            |  |
| 4/24/96 | 2101 | 0.13%           | 1.24%     |                | 1.37%  | 0.18%  |            |  |
| 4/25/96 | 2102 | -0.04%          | 0.71%     |                | 0.67%  | -0.03% |            |  |
| 4/26/96 | 2103 | 0.42%           | 2.26%     |                | 2.68%  | 0.55%  | 1          | 4/27 US threatens to withdraw satellite services from its telecom. liberalization offer  |
| 4/29/96 | 2104 | -0.14%          | 4.70%     | *              | 4.57%  | -0.16% | 1          | EU leaders warned that the WTO telecoms talks could collapse due to the U.S. excluding satellite communication services from the deal. A senior EU negotiator noted that "it's a potential deal-breaker", the EU delegation called the US proposal "completely |
| 4/30/96 | 2105 | -0.05%          | 0.88%     |                | 0.83%  | -0.05% | 1          | US propose and win an extension in the talks   |
| 5/1/96  | 2106 | 0.17%           | 1.06%     |                | 1.24%  | 0.23%  |            |  |
| 5/2/96  | 2107 | -0.74%          | 3.39%     | *              | 2.65%  | -0.92% |            |  |
| 5/3/96  | 2108 | -0.50%          | 1.10%     |                | 0.60%  | -0.62% |            |  |
| 2/5/97  | 2300 | -0.36%          | -1.01%    |                | -1.37% | -0.43% |            |  |
| 2/6/97  | 2301 | -0.59%          | 1.05%     |                | 0.46%  | -0.72% |            |  |
| 2/7/97  | 2302 | 0.66%           | -3.42%    | *              | -2.76% | 0.84%  |            |  |
| 2/10/97 | 2303 | 0.51%           | -0.74%    |                | -0.24% | 0.65%  |            |  |
| 2/11/97 | 2304 | -0.39%          | 1.11%     |                | 0.71%  | -0.48% |            |  |
| 2/12/97 | 2305 | 1.09%           | 1.51%     |                | 2.59%  | 1.39%  |            |  |
| 2/13/97 | 2306 | 1.15%           | 1.61%     |                | 2.76%  | 1.47%  |            |  |
| 2/14/97 | 2307 | 0.22%           | -5.14%    | *              | -4.92% | 0.29%  |            |  |
| 2/18/97 | 2308 | 0.10%           | -1.98%    |                | -1.88% | 0.14%  | 1          | 2/15/97: WTO negotiations concluded successfully   |
| 2/19/97 | 2309 | 0.29%           | -2.45%    |                | -2.16% | 0.39%  |            |  |
| 2/20/97 | 2310 | -0.79%          | -1.41%    |                | -2.21% | -0.98% |            |  |
| 2/21/97 | 2311 | -0.40%          | -2.11%    |                | -2.51% | -0.49% |            | Comsat reports 1996 earnings today. Revenues were \$1 billion, up 17.6% in 1995; net income was \$8.6 million, 16 cents per share, down from \$36 million, or 79 cents per share, in 1995.   |
| 2/24/97 | 2312 | 0.19%           | 0.07%     |                | 0.26%  | 0.26%  |            |  |

A2-12

**Chart A2-4****Comsat vs S&P 500 Daily Returns;  
(WTO/GATS event dates highlighted)**

**Table A2-4: PanAmSat-Hughes Merger**

| Date    | Obs  | Predicted CQ_DR | Residuals | 5% significant | CQ_DR  | SP_DR  | PAS&Hughes merger | Event   |
|---------|------|-----------------|-----------|----------------|--------|--------|-------------------|---|
| 1/5/88  | 1    | 2.22%           | -0.67%    |                | 1.55%  | 2.82%  |                   |   |
| 1/6/88  | 2    | -0.13%          | 0.13%     |                | 0.00%  | -0.14% |                   |   |
| 1/7/88  | 3    | 0.06%           | 0.15%     |                | 0.22%  | 0.10%  |                   |   |
| 1/8/88  | 4    | -2.07%          | 2.29%     |                | 0.22%  | -2.60% |                   |   |
| 4/2/96  | 2086 | 0.52%           | 3.74%     | *              | 4.26%  | 0.67%  |                   |   |
| 4/3/96  | 2087 | -0.04%          | 2.33%     |                | 2.30%  | -0.03% |                   |   |
| 4/4/96  | 2088 | 0.22%           | 0.78%     |                | 1.00%  | 0.30%  | 1                 | PanAmSat owners are exploring options, including a possible sale.               |
| 4/8/96  | 2089 | -1.08%          | -0.90%    |                | -1.98% | -1.35% |                   |   |
| 4/9/96  | 2090 | -0.42%          | 1.94%     |                | 1.51%  | -0.52% |                   |   |
| 4/10/96 | 2091 | -0.79%          | 6.25%     | *              | 5.46%  | -0.98% |                   |   |
| 4/11/96 | 2092 | -0.95%          | 1.66%     |                | 0.71%  | -1.19% |                   |   |
| 8/22/96 | 2185 | 0.45%           | -0.13%    |                | 0.32%  | 0.58%  |                   |   |
| 8/23/96 | 2186 | -0.01%          | 1.28%     |                | 1.27%  | 0.00%  |                   |   |
| 8/26/96 | 2187 | -0.38%          | 1.32%     |                | 0.94%  | -0.47% |                   |   |
| 8/27/96 | 2188 | 0.02%           | 6.17%     | *              | 6.19%  | 0.04%  | 1                 | Sale of PanAmSat said to be imminent, Hughes tops list of suitors.              |
| 8/28/96 | 2189 | 0.10%           | 6.02%     | *              | 6.12%  | 0.14%  |                   |   |
| 8/29/96 | 2190 | -0.71%          | 0.98%     |                | 0.27%  | -0.87% |                   |   |
| 8/30/96 | 2191 | -0.73%          | 0.18%     |                | -0.55% | -0.90% |                   |   |
| 9/3/96  | 2192 | -0.57%          | 0.84%     |                | 0.28%  | -0.70% |                   |   |
| 9/4/96  | 2193 | 0.58%           | -0.58%    |                | 0.00%  | 0.74%  |                   |   |
| 9/5/96  | 2194 | -0.27%          | -1.38%    |                | -1.65% | -0.32% |                   |   |
| 9/6/96  | 2195 | 0.18%           | 2.06%     |                | 2.23%  | 0.24%  |                   |   |
| 9/9/96  | 2196 | 0.70%           | 1.76%     |                | 2.46%  | 0.90%  |                   | Federal judge dismisses PanAmSat suit against Comsat.                           |
| 9/10/96 | 2197 | 0.45%           | -2.85%    | *              | -2.40% | 0.58%  | 1                 | PanAmSat is said to be in talks to sell controlling stake to Hughes Electronics |
| 9/11/96 | 2198 | 0.13%           | 1.23%     |                | 1.37%  | 0.18%  |                   |   |
| 9/12/96 | 2199 | 0.62%           | -0.89%    |                | -0.27% | 0.80%  |                   |   |
| 9/13/96 | 2200 | 0.72%           | -0.18%    |                | 0.54%  | 0.92%  |                   |   |
| 9/16/96 | 2201 | 0.84%           | -0.84%    |                | 0.00%  | 1.07%  |                   |   |
| 9/17/96 | 2202 | -0.10%          | 1.18%     |                | 1.08%  | -0.11% |                   |   |
| 9/18/96 | 2203 | -0.12%          | 1.99%     |                | 1.86%  | -0.14% |                   |   |
| 9/19/96 | 2204 | -0.03%          | 0.30%     |                | 0.26%  | -0.03% |                   |   |

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**Table A2-4: PanAmSat-Hughes Merger**

| Date     | Obs  | Predicted CQ_DR | Residuals | 5% significant | CQ_DR  | SP_DR  | PAS&Hughes merger | Event   |
|----------|------|-----------------|-----------|----------------|--------|--------|-------------------|---|
| 9/20/96  | 2205 | 0.39%           | 0.91%     |                | 1.30%  | 0.51%  | 1                 | Hughes Electronics Corp. and PanAmSat Corp. announce agreement to merge satellite businesses into new public company.   |
| 9/23/96  | 2208 | -0.13%          | -0.13%    |                | -0.26% | -0.15% |                   |   |
| 9/24/96  | 2207 | 0.36%           | 0.16%     |                | 0.52%  | 0.47%  |                   |   |
| 9/25/96  | 2208 | -0.08%          | -1.45%    |                | -1.54% | -0.09% |                   |   |
| 12/2/96  | 2255 | -0.26%          | 2.43%     |                | 2.17%  | -0.31% |                   |   |
| 12/3/96  | 2256 | 0.03%           | -0.74%    |                | -0.71% | 0.05%  |                   |   |
| 12/4/96  | 2257 | -1.19%          | 0.00%     |                | -1.19% | -1.49% |                   |   |
| 12/5/96  | 2258 | 0.17%           | 0.79%     |                | 0.96%  | 0.23%  | 1                 | No Further Antitrust Approvals Necessary to Complete Merger GREENWICH, Conn., December 6, 1996 Yesterday the Antitrust Division of the U.S. Department of Justice permitted a key 30-day review period to pass without taking action to halt the merger or imp    |
| 12/6/96  | 2259 | -1.02%          | -3.51%    | *              | -4.52% | -1.27% |                   |   |
| 12/9/96  | 2260 | 0.96%           | -0.21%    |                | 0.75%  | 1.22%  |                   |   |
| 12/10/96 | 2261 | 0.58%           | 0.16%     |                | 0.74%  | 0.74%  |                   |   |
| 4/1/97   | 2337 | -0.91%          | -0.89%    |                | -1.80% | -1.13% |                   |   |
| 4/2/97   | 2338 | -0.30%          | -2.06%    |                | -2.36% | -0.36% |                   |   |
| 4/3/97   | 2339 | -0.63%          | -1.78%    |                | -2.41% | -0.78% |                   |   |
| 4/4/97   | 2340 | 0.33%           | -1.43%    |                | -1.10% | 0.43%  | 1                 | FCC Approval Leaves Only SEC Clearance, Shareholder Vote For Merger Completion FCC approves a transfer of orbital slot licenses from PanAmSat and Galaxy to the new, combined PanAmSat Corporation.   |
| 4/7/97   | 2341 | 1.08%           | 3.64%     | *              | 4.72%  | 1.38%  |                   |   |
| 4/8/97   | 2342 | 0.09%           | 2.83%     | *              | 2.92%  | 0.12%  |                   |   |
| 4/9/97   | 2343 | 0.20%           | -1.75%    |                | -1.55% | 0.27%  |                   |   |
| 4/14/97  | 2346 | -1.00%          | -0.29%    |                | -1.29% | -1.25% |                   |   |
| 4/15/97  | 2347 | 1.12%           | 0.18%     |                | 1.31%  | 1.43%  |                   |   |
| 4/16/97  | 2348 | 0.89%           | 0.14%     |                | 1.03%  | 1.14%  |                   |   |
| 4/17/97  | 2349 | 0.70%           | -0.95%    |                | -0.26% | 0.89%  | 1                 | The SEC has declared the registration statement (of the Hughes-PanAmSat merger) effective. PanAmSat Corporation announced today that it will mail to proxy detailing the planned PanAmSat and Galaxy Satellite division of Hughes to its shareholders.            |
| 4/18/97  | 2350 | 0.02%           | -1.82%    |                | -1.79% | 0.04%  |                   |   |
| 4/21/97  | 2351 | -0.32%          | -3.07%    | *              | -3.39% | -0.39% |                   | Comsat reported today a net loss of \$5.3m, or 11 cents per share, for 1Q97, versus net income of \$9.3m, or 19 cents per share, for same period last year. However, all of the losses came from Ascent Entertainment Group, which the company plans to divest in |
| 4/22/97  | 2352 | 0.55%           | -3.79%    | *              | -3.24% | 0.71%  |                   |   |
| 4/23/97  | 2353 | 0.79%           | -1.35%    |                | -0.56% | 1.01%  |                   |   |
| 5/5/97   | 2361 | 1.49%           | 0.56%     |                | 2.05%  | 1.90%  |                   |   |
| 5/6/97   | 2362 | 0.71%           | 1.30%     |                | 2.01%  | 0.91%  |                   |   |

A2-15



**Table A2-4: PanAmSat-Hughes Merger**

| Date    | Obs  | Predicted CQ_DR | Residuals | 5% significant | CQ_DR  | SP_DR  | PAS&Hughes merger | Event  |
|---------|------|-----------------|-----------|----------------|--------|--------|-------------------|--|
| 5/7/97  | 2363 | -0.71%          | 0.99%     |                | 0.28%  | -0.88% |                   |  |
| 5/8/97  | 2364 | -0.09%          | 0.09%     |                | 0.00%  | -0.09% | 1                 | PanAmSat shareholders approve merger.  |
| 5/9/97  | 2365 | 0.11%           | 0.17%     |                | 0.28%  | 0.15%  |                   |  |
| 5/12/97 | 2366 | 0.95%           | -0.67%    |                | 0.28%  | 1.21%  |                   |  |
| 5/13/97 | 2367 | 0.19%           | -1.59%    |                | -1.40% | 0.26%  |                   |  |
| 5/14/97 | 2368 | 0.31%           | -1.16%    |                | -0.85% | 0.41%  |                   |  |
| 5/15/97 | 2369 | 0.05%           | -2.05%    |                | -2.00% | 0.08%  |                   |  |
| 5/16/97 | 2370 | -0.24%          | -0.05%    |                | -0.29% | -0.28% | 1                 | PanAmSat and the Galaxy® satellite services business of Hughes Communications, Inc. officially merged / Comsat board approves a tax-free spin off of Ascent Entertainment / US Court of Appeals affirms lower court's dismissal of PAS's anti-trust lawsuit. |
| 5/19/97 | 2371 | -0.31%          | 0.60%     |                | 0.29%  | -0.37% |                   |  |
| 5/20/97 | 2372 | 0.16%           | -0.74%    |                | -0.58% | 0.22%  |                   |  |
| 5/21/97 | 2373 | 0.64%           | 0.24%     |                | 0.88%  | 0.82%  |                   |  |